HMC285

GaAs MMIC SMT SINGLE BALANCED MIXER, 1.7 - 3.5 GHz

Typical Applications

The HMC285 is ideal for:

- PCS
- W-CDMA
- 2.4 GHz ISM
- MMDS

Features

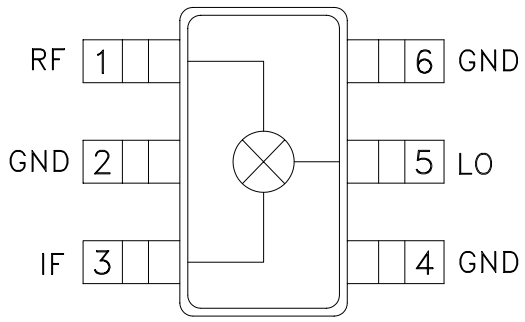
No External Components Required

LO / RF Isolation: 30 dB

Input IP3: +20 dBm

Ultra Small SOT26 Package

Functional Diagram



General Description

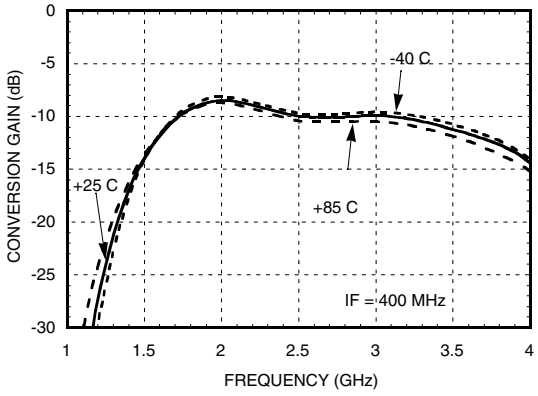
The HMC285 is an ultra miniature single balanced mixer in an 6 lead plastic surface mount SOT26 package. This passive MMIC mixer is constructed of GaAs Schottky diodes and a novel planar transformer balun on the chip. The RF port is balanced via the MMIC balun while the LO port is connected directly to the diodes. The consistent MMIC performance will improve system operation without the need for external components. The SOT26 package is the smallest footprint available for a complete single-balanced mixer, 0.118" x 0.118" (3.0mm x 3.0mm).

Electrical Specifications, T_A = +25° C, As a Function of IF Frequency

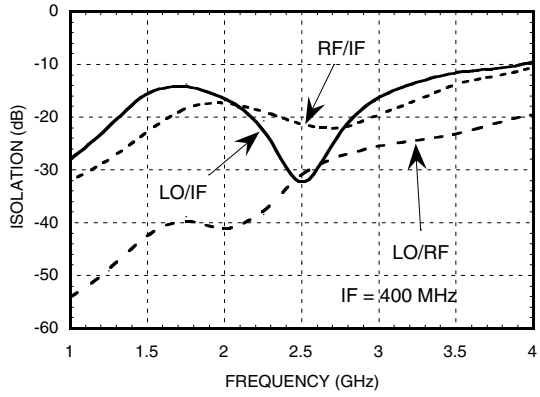
Parameter	LO = +10 dBm IF = 100 MHz			LO = +10 dBm IF = 400 MHz			Units
	Min.	Typ.	Max.	Min.	Typ.	Max.	
Frequency Range, RF & LO	2 - 3.5			1.7 - 2.8			GHz
Frequency Range, IF	DC - 0.9			DC - 0.9			GHz
Conversion Loss		9	11		9.5	11.5	dB
Noise Figure (SSB)		9	11		9.5	11.5	dB
LO to RF Isolation	20	30		25	35		dB
LO to IF Isolation	11	20		14	20		dB
IP3 (Input)	17	21		16	20		dBm
1 dB Compression (Input)	7	11		6	10		dBm

For price, delivery, and to place orders, please contact Hittite Microwave Corporation:
12 Elizabeth Drive, Chelmsford, MA 01824 Phone: 978-250-3343 Fax: 978-250-3373
Order Online at www.hittite.com

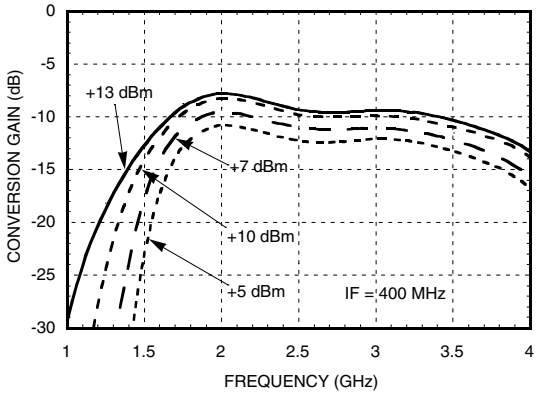
Conversion Gain vs. Temperature @ LO = +10 dBm



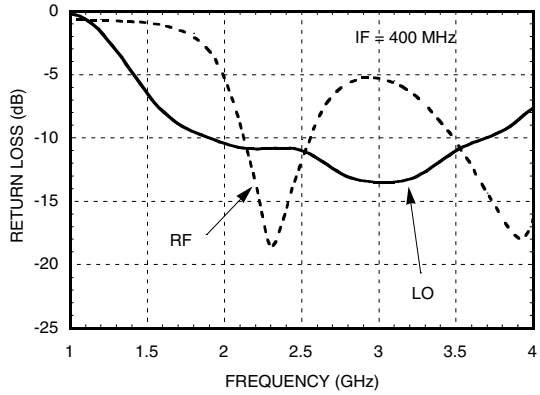
Isolation @ LO = +10 dBm



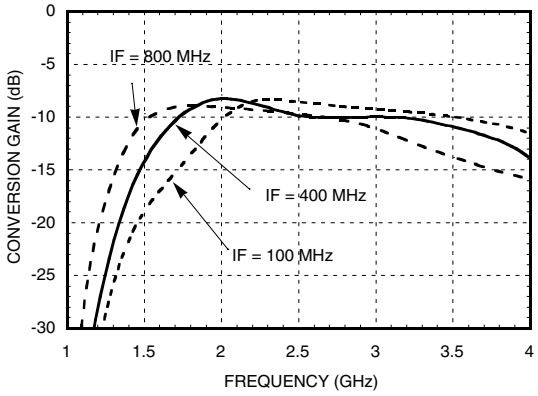
Conversion Gain vs. LO Drive



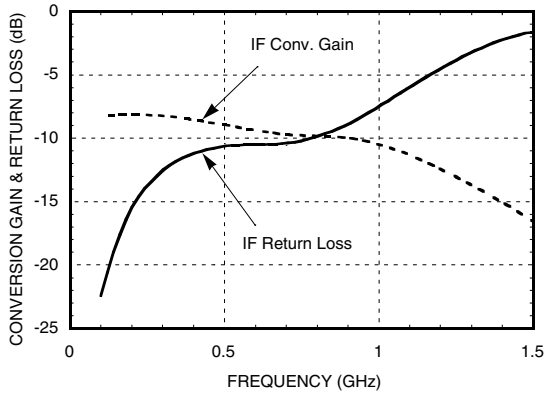
Return Loss @ LO = +10 dBm



Conversion Gain vs. IF Frequency

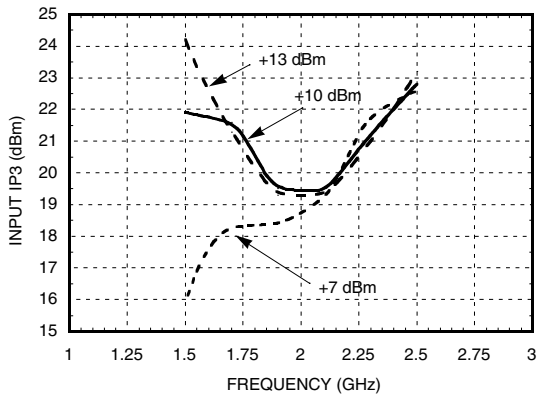


IF Bandwidth @ LO = +10 dBm. Conversion Gain & Return Loss

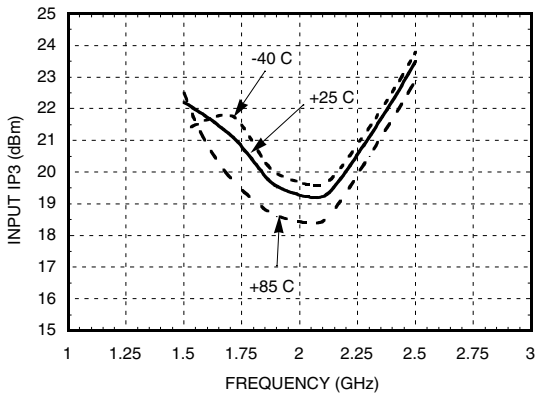


GaAs MMIC SMT SINGLE BALANCED MIXER, 1.7 - 3.5 GHz

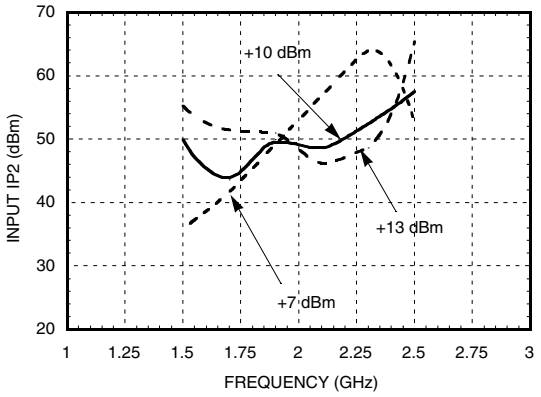
Input IP3 vs. LO Drive



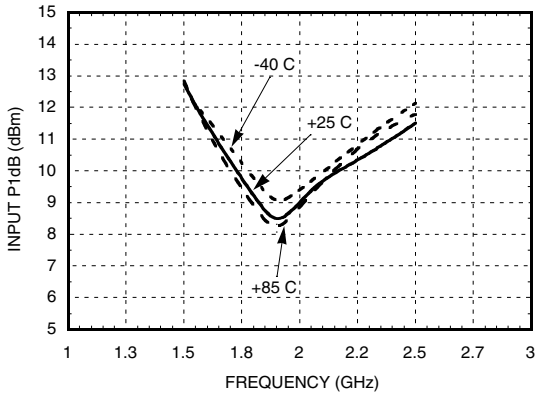
Input IP3 vs. Temperature @ LO = +10 dBm



Input IP2 vs. LO Drive



P1dB vs. Temperature @ LO = +10 dBm



MxN Spurious Outputs

	nLO				
mRF	0	1	2	3	4
0	xx	-12.4	1	1	33
1	10	0	38	23	43
2	59	60	61	43	62
3	>110	87	90	80	88
4	>110	>110	>110	>110	>110

RF = 2.6 GHz @ -10 dBm
LO = 2.2 GHz @ +10 dBm
All values in dBc relative to the IF

Harmonics of LO

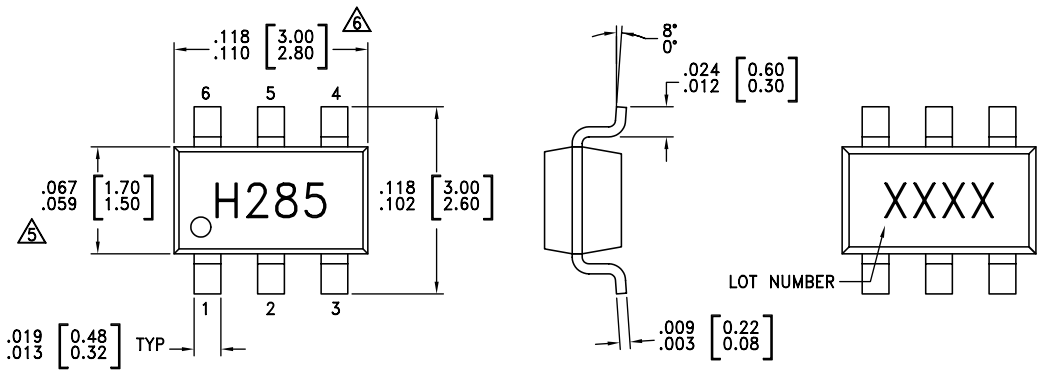
	nLO Spur at RF Port			
LO Frequency (GHz)	1	2	3	4
1.5	42	17	47	47
1.7	39	16	41	44
1.9	39	15	37	44
2.1	47	16	35	45
2.3	36	18	32	48
2.5	30	21	32	50

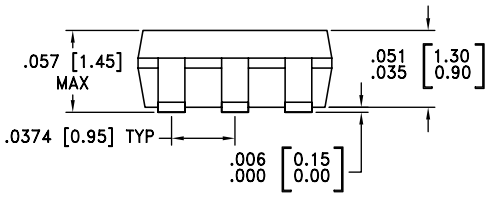
LO = +10 dBm
Values in dBc below input LO level measured at the RF port

Absolute Maximum Ratings

RF / IF Input	+13 dBm
LO Drive	+27 dBm
Storage Temperature	-65 to +150 °C
Operating Temperature	-40 to +85 °C

Outline Drawing

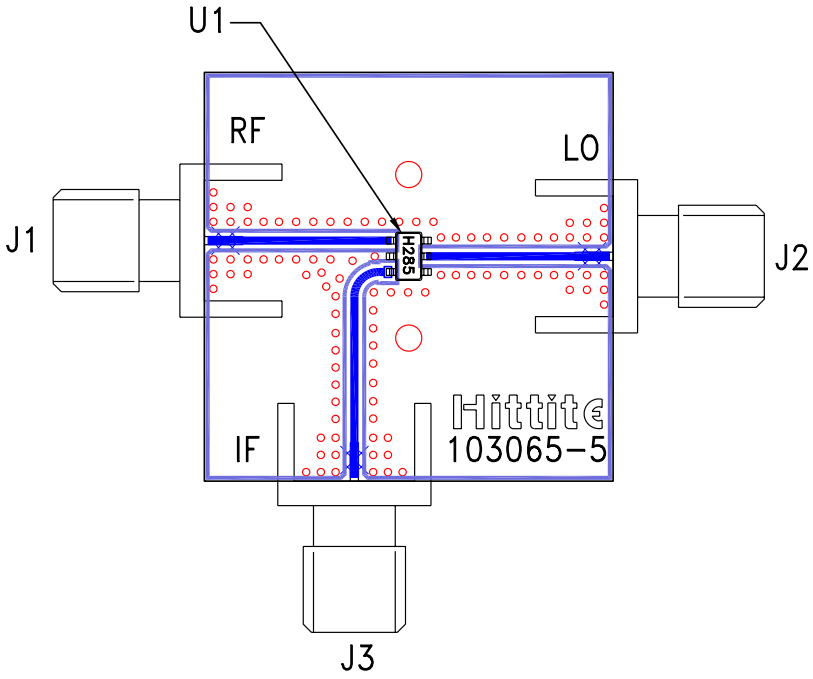




NOTES:

1. PACKAGE BODY MATERIAL: LOW STRESS INJECTION MOLDED PLASTIC SILICA AND SILICON IMPREGNATED.
2. LEADFRAME MATERIAL: COPPER ALLOY
3. LEADFRAME PLATING: Sn/Pb SOLDER
4. DIMENSIONS ARE IN INCHES [MILLIMETERS].
5. DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.15mm PER SIDE.
6. DIMENSION DOES NOT INCLUDE MOLDFLASH OF 0.25mm PER SIDE.
7. ALL GROUND LEADS MUST BE SOLDERED TO PCB RF GROUND.

Evaluation Board Layout



List of Materials

J1 - J3	PC Mount SMA Connector
U1	HMC285 Mixer
PCB	103065 Eval Board
* Circuit Board Material: 4350	

The circuit board used in the final application should be generated with proper RF circuit design techniques. Signal lines should have 50 ohm impedance and the package ground leads should be connected directly to the ground plane similar to that shown above. The evaluation circuit board as shown is available from Hittite upon request.

Notes: